

Carl Zeiss Meditec AG
Attorney's File: PAT 9030/061-PCT

Claims

5

1. An adapter for coupling a laser processing device (1) to an object (17), said adapter comprising:

- a central region (22) which can be moved into the beam path of the laser processing device (1),

10 - an illumination beam path through which illumination radiation (25) can be guided for illumination of an object field which can be covered by the central region (22), and

- a peripheral region (23) located outside the central region (22) and by which the adapter (12) can be mounted on the object (17) and/or on the laser processing device (1), wherein the illumination beam path is guided in the peripheral region (23) and carries illumination radiation (25), coupled into the peripheral region (23), to the object field in at least one of the 15 following ways: directly and via the central region (22).

2. The adapter as claimed in Claim 1, wherein the central region comprises a contact glass (22) to be placed on the object (17) and the peripheral region comprises a mount (23) of the 20 contact glass (22).

3. The adapter as claimed in Claim 2, wherein the mount (23) comprises a material which is transparent for illumination radiation (25), in particular PMMA, polycarbonate, Zeonex or HW 55.

25 4. The adapter as claimed in any one of the above Claims, characterized by at least one coupling unit (24) for illumination radiation (25), said coupling unit being provided at the peripheral region (23).

5. The adapter as claimed in Claim 4, wherein the coupling unit (24) has an imaging effect 30 for the illumination radiation (25) and comprises, in particular, a convex, concave, cylindrical and/or toroidal interface (44).

6. The adapter as claimed in Claim 4 or 5, wherein the coupling unit (24) comprises a dielectric layer for the purpose of spectral filtering or reduction of reflections.

35

7. The adapter as claimed in any one of the above Claims, wherein the peripheral region (23) comprises a surface which reflects the illumination radiation (25), in particular an outside surface.

8. The adapter as claimed in any one of Claims 5 and 7, wherein a plurality of coupling units (24) are provided, the reflecting surface is segmented into facets and each coupling unit has a facet or group of facets assigned to it.
- 5 9. The adapter as claimed in Claim 7 or 8, wherein the reflecting surface has an imaging effect for the illumination radiation (25).
- 10 10. The adapter as claimed in Claim 2 or as claimed in any one of the above Claims in combination with Claim 2, wherein an adhesive layer is provided between the mount (23) and the contact glass (22), in particular an adhesive layer having a refractive index which is between the refractive index of the mount (23) and that of the contact glass (22).
- 15 11. The adapter as claimed in Claim 4 or as claimed in any one of the above Claims in combination with Claim 4, wherein the coupling unit comprises an LED (28) mounted to or embedded in the peripheral region (23).
- 20 12. The adapter as claimed in Claim 11, wherein contacts (50, 51), in particular annular contacts allowing contact to be made in any rotary position relative to the laser processing device (1) are provided at the peripheral region (23).
13. The adapter as claimed in any one of the above Claims, wherein the central region (22) and the peripheral region (23) are realized as one integral component.